

## CHAPTER 2

### PRESENTATION OF DATA

#### INDEX

	<u>Page</u>
2.1 <u>GENERAL</u>	2-1
2.1.1 Standards for Data Presentation	2-1
2.1.2 Document Format Guidelines	2-1
2.2 <u>APPLICABLE PUBLICATIONS</u>	2-1
2.2.1 Internet	2-1
2.3 <u>SUBMITTAL REQUIREMENT</u>	2-1
2.3.1 Submittal Types	2-1
2.3.2 Final Design (Unreviewed 100%)	2-2
2.3.3 Ready To Advertise (Reviewed 100%)	2-2
2.4 <u>DOCUMENT REVIEW AND COORDINATION</u>	2-2
2.5 <u>DRAWINGS</u>	2-2
2.5.1 CADD Standards and Naming Convention	2-2
2.5.2 CADD Fonts	2-3
2.5.3 Drawing Package Assemblage	2-3
2.5.4 Drawing Title Blocks and Borders	2-3
2.5.5 Drawing Layout	2-3
2.5.6 Drawing Standard Lines Styles and Widths	2-3
2.5.7 Drawing Scales	2-3
2.5.8 Drawing Cross Referencing	2-3
2.5.9 Special Requirements	2-3
2.5.10 For Information Only Drawings	2-4
2.5.11 Drawing Amendments and Change Orders Revisions	2-4
2.5.12 CADD(Computer Aided Design & Drafting) Submittals	2-5
2.6 <u>DESIGN ANALYSIS</u>	2-5
2.6.1 Media and Format	2-5
2.6.2 Organization	2-5
2.6.3 Design Calculations	2-5
2.6.4 Automatic Data Processing Systems (ADPS)	2-6
2.7 <u>SPECIFICATIONS</u>	2-6
2.8 <u>COST ESTIMATES</u>	2-6
2.9 <u>BORING LOGS AND TEST DATA</u>	2-6

#### EXHIBITS

2-1	Project Title Block	2-7
2-2	Section and Detail Cross Reference	2-8
2-3	Sketch Sheet MOB Form	2-9
2-4	Sample Revision Block	2-10

## CHAPTER 2

### PRESENTATION OF DATA

#### 2.1 GENERAL.

##### 2.1.1 Standards for Data Presentation.

Unless specifically noted in the Statement of Work (SOW), the standards contained in this manual shall be used in the preparation of all documents. All designers associated with a project and the development and review of drawings, specifications, and other data are required to use this Manual.

##### 2.1.2 Document Format and Guidelines.

All documents shall be legible and clearly expressed. Standard format for presentation for many documents are prescribed herein. Each document required to be submitted by this manual shall be adequately titled and dated and show the stage of the submittal clearly marked on the cover sheet. Pages within a section or chapter of a document shall be consecutively numbered and indexed so that specific information can be easily located.

#### 2.2 APPLICABLE PUBLICATIONS.

Tri-Service	A/E/C CADD Standards Manual
ER 1110-345-700	Engineering and Design - Design Analysis

##### 2.2.1 Internet.

The Mobile District Engineering Division home page address is <http://www.sam.usace.army.mil/sam/en/en.htm>. Upon accessing the Mobile District home page, a list of links to design guides will appear. This Design Manual and Design Analysis and a access to the Tri-Services Manual as well as other guides are available.

#### 2.3 SUBMITTAL REQUIREMENTS.

This section covers the designers deliverables for all submittals. All instruction listed below shall be followed unless specified otherwise in the SOW. Other specific instructions are provided in the Statement of Work.

All 8 ½" x 11" documents shall be bound and two-sided copies. All drawings submitted shall be half size 11" X 17".

##### 2.3.1 Submittal Types.

The above guides are for Project Definition Submittal (10-15%), Concept Submittal (30-35%), Interim Submittal (50-65%).

##### 2.3.2 Final Submittal (unreviewed 100%)

This submittal represents a 100% complete design for the purpose of review before the Ready-To-Advertise submittal. The Final submittal shall be unbound and full size, 22" x 34" black line prints. Half size 11" x 17" prints

may be submitted upon approval of the Program Manager. See Chapter 3, SPECIFICATIONS for the Final specifications requirements.

### 2.3.3 Ready-To-Advertise Reviewed (100%).

This submittal represents a 100% complete design to include any comments resulting from the review of the Final submittal.

All drawings shall include the contract solicitation number, file number and date. This will be provided with the final review comments. See Chapter 3, SPECIFICATIONS for the Ready-To-Advertise (RTA) submittal

The RTA drawings shall be submitted unbound on 22" x 34" vellum sheets with the emulsion on the front. Provide one set of CADD files as described in paragraph 2.5.12 Computer Aided Design and Drafting(CADD)File Submittals.

## 2.4 DOCUMENT REVIEW AND COORDINATION.

The designer shall check and coordinate each submittal for omissions, repetition and resolve conflicts. The designer shall prepare the drawings and specifications with the expectation that the construction contractors shall be able to complete construction without any additional assistance or issuance of modifications to correct design deficiencies. Coordination among disciplines and between drawings and specifications is essential.

The guide specifications contain design information as notes to the designer. These notes include restrictions and guidelines on the selections of materials and of construction methods. They also include details and information which must be shown on the drawings. The designer shall coordinate these notes, drawings and other submittal data with the guide specifications.

## 2.5 DRAWINGS.

### 2.5.1 CADD Standards and Naming Convention.

All drawings shall be created using Computer Aided Design Drafting methods in the latest version of MicroStation or AutoCAD. All final (RTA) CADD files shall be compatible with the Mobile Districts target CADD system which is the latest version of MicroStation. The term "Compatible" means that data can be accessed directly by the target CADD system without translation, preprocessing, or postprocessing of the electronic data files. All symbology for CADD files shall be in accordance with the latest version of the A/E/C CADD Standards Manual. The Term "Symbology" means level/layer names, color, line weight, and line style. CADD features not addressed in the A/E/C CADD Standards Manual shall conform to normal drafting standards.

The CADD standard naming convention shall be as described in Chapter 2 of the A/E/C CADD Standards Manual. This shall insure proper naming of files and tracking of the project within the Mobile District.

CADD files shall be prepared to include the following:

(a) CADD files shall have a standard origin as described in Chapter 3 of the A/E/C CADD Standards Manual.

(b) Graphic elements placed in the drawing must have a z-axis of 0.

(c) Extraneous graphics outside the border area shall be removed.

(d) Reference files shall be attached without device or directory specifications.

## CADD Fonts.

Only standard fonts described in the A/E/C CADD Standards Manual or this Manual are allowed to be used in the creation of CADD files. Preferred text usage shall be font # 1 "Working" for MicroStation and "Romans" for AutoCAD. No fonts created by third parties or the designer are permitted. Font Monotext (AutoCAD) and Font #0 (MicroStation) are not permitted.

### 2.5.3 Drawing Package Assemblage.

Chapter 3 Table 10 of the A/E/C CADD Standards Manual shows the order of a typical package. All drawings submitted should be properly sequenced.

### 2.5.4 Drawing Title Blocks and Borders.

Typical contract drawings will be prepared on sheets 22" x 34" as described in the A/E/C CADD Standards Manual. Exhibit 2-1 provides guidance on filling in the title blocks. The project title and location will be specified by the Mobile District PAE. The sheet title assigned by the designer should clearly define the information contained on that drawing. All title block information must be as complete as possible for each submittal.

### 2.5.5 Drawing Layout.

Drawings shall be prepared so that they present complete information. Drawings shall be void of unnecessary wasted space, duplicate notes, and repetitive details. Standard details not applicable to the project shall not be shown. Details of standard products which are adequately covered in the specifications shall not be included on the drawings. Drawings shall be detailed to the extent that an accurate estimate can be prepared. Drawings are required to meet all drafting standards set forth herein to insure clarity and legibility when reduce to half size. Drawings, when plotted to full size, shall use a minimum text height of 3/16 inch. All details shall be titled. Complete legends, symbols and lists of abbreviations shall be placed on the drawings so their meaning is clear.

### 2.5.6 Drawing Standard Lines Styles and Widths.

All CADD design file graphics, line weights and styles, shall be standardized by the use of the A/E/C CADD Standards Manual Chapter 2 Graphics Concepts. Tables 2, 3 and 4 of Chapter 2 provides these standards.

### 2.5.7 Drawing Scales.

The A/E/C CADD Standards Manual describes drawing scale in Metric and the Customary equivalent(English Standard) in Chapter 2, Table 7.

### 2.5.8 Drawing Cross Referencing.

Cross-referencing for sections and details shall be based on the sheet reference number in accordance with Exhibit 2-2.

### 2.5.9 Special Requirements.

The submittal requirements for each design stage are listed elsewhere in this manual and shall determine the appropriateness of the following:

#### 2.5.9.1 Location of Project Elements.

To facilitate the location of project elements and the coordination of the various drawings, all plans with column grids shall indicate a column line or planning grid, and all floor plans (except structural plans) shall show room numbers.

#### 2.5.9.2 Composite and Key Plans.

If plans for a large building or structure must be placed on two or more sheets to maintain proper scale, the total plan shall also be placed on one sheet at a smaller scale. Appropriate key plans and match lines shall appear on segmented drawings. Key plans shall be used to relate large scale plans to total floor plans and for individual buildings to complexes of buildings. Key plans shall be placed in a convenient location and shall indicate represented plan area by crosshatching.

#### 2.5.10 For Information Only Drawings.

When drawings from previous contracts are deemed necessary for information purposes only, the words "FOR INFORMATION ONLY" shall be printed in bold letters immediately above the title block or as near thereto as practical. The original title blocks shall not be changed. For filing and sequential purposes, a Mobile District file number for the new project shall be printed in the margin below the title block.

#### 2.5.11 Drawing Amendments and Change Orders Revisions.

The designer may be involved in two types of drawing revisions - amendments during the advertisement and/or change orders after a contract is awarded. All designers are responsible for preparing amendments and change orders which are a result of design errors.

##### 2.5.11.1 Flagging Drawing Revisions.

All Amendments and Change Order revisions shall be flagged by a "teardrop" symbol as shown in Exhibit 2-4. The designer should use sound judgment concerning the location of "teardrops". Pertinent portions of details, plans, sections or diagrams should be flagged adjacent to the change or revision with the tip of the teardrop placed towards the change. Each "teardrop" symbol shall also be sequentially numbered with 1, 2, 3, etc. If the drawing has not been previously revised, then all changes shall be given a letter "A" within each "teardrop" symbol. If the drawing has been previously revised, the next succeeding letter shall be used within the "teardrop." For example: A drawing revised previously by two amendments; "A" and "B" changes should reflect the initial and second set of changes to the drawings, respectively. The third change to this drawing would be flagged with "C" "teardrops". The total number of teardrops for the revision and a short description shall be placed in the revision block.

##### 2.5.11.2 Deleted Drawings.

When necessary to remove a drawing from an existing advertised/awarded contract package, the index drawings shall be flagged with a "teardrop" symbol on the line of that particular drawing. A line drawn through the listing for that drawing with the word "Deleted" inserted at the end of the title. The "Revisions" block of the index sheet should also be flagged and the deletion noted.

##### 2.5.11.3 Added Drawings.

When drawings are added to an existing advertised/awarded contract project, a "teardrop" shall be placed on the Index of Drawings sheet and adjacent to the added drawing. The new drawings shall use the existing numbering convention with the suffix "A," "B," etc., added to the file number. When the new drawing follows the last existing drawing, the next sequential file number shall be used without a suffix.

#### 2.5.11.4 Replaced Drawings.

When drawings supersede originals, the file numbers on the replaced drawings shall match exactly the file numbers of the originals, with one exception. A ".1" shall be added to the end of file number. A ".2" shall be added if replaced a second time; etc.. The Index of Drawings shall be revised to reflect this change. The title block of the replaced drawing shall contain the same information as the original drawing and include a flagged teardrop symbol adjacent to the title block.

#### 2.5.11.5 Drawing Revisions on CADD.

The designer should take special precaution to keep his drawing CADD files up-to-date to reflect the latest revision whether by amendment or change order. No matter how often a CADD drawing is changed the CADD file name shall remain the same as the original CADD file.

#### 2.5.12 CADD(Computer Aided Design and Drafting) File Submittals.

All Ready-To-Advertise CADD files, amendments and change orders shall be submitted on one of the following media. Use PKZIP if files are too large for the diskettes.

Diskettes - "3.5" DS/HD Using "Copy" commands.

Read/Write Optical Disk (CD's ROM) Using "Copy" commands.

### 2.6 DESIGN ANALYSIS.

#### 2.6.1 Media and Format.

The design analysis shall be printed on 8 ½" x 11" paper except when larger paper 11" x 17" folded to 8 ½" by 11" as fold-out is required for graphs or special calculation forms.

#### 2.6.2 Organization.

The design analysis shall be in a sequential binding order and bound under a cover indicating the name of the facility. The title page shall carry the designation of the submittal. The complete design analysis presented for final review with specifications and drawings shall carry the designation "FINAL DESIGN ANALYSIS" on the title page.

#### 2.6.3 Design Calculations.

The design calculations shall be presented in a form incorporating a title page and index for each volume. When they are voluminous, they shall be bound separately from the narrative part of the design analysis. A table of contents, which shall be an index of the indices, shall be furnished when there is more than one volume. The source of loading conditions, sketches, supplementary graphs, formulas, and references shall be identified. Assumptions

and conclusions shall be explained. Calculation sheets shall carry the names or initials of the person making the calculations and the checker and dates.

#### 2.6.4 Automatic Data Processing Systems (ADPS).

When ADPS are used to perform design calculations, the design analysis shall include descriptions of the computer programs used and copies of the ADPS input data and output summaries. Each set of computer printouts shall be preceded by an index and a description of the computation performed. If several sets of computations are submitted, they shall be accompanied by a general table of contents in addition to the individual indices. The description, for an ADPS printout, shall include the following:

- (a) Explain the design method, assumptions, theories, and formulae.
- (b) Include applicable diagrams, adequately identified.
- (c) State exactly the computation performed by the computer.
- (d) Provide all necessary explanations of the computer printout format, symbols, and abbreviations.
- (e) Use adequate and consistent notation.
- (f) Provide sufficient information to permit a check of the results.

#### 2.7 SPECIFICATIONS.

For preparation of Specifications; See Chapter 3 of this manual.

#### 2.8 COST ESTIMATES.

For preparation of Cost Estimates; See Chapter 19 of this manual.

#### 2.9 BORING LOGS AND TEST DATA.

Boring logs and laboratory test data shall be provided in Adobe Acrobat Portable Document Format (PDF) files. See Chapter 6 of this manual for additional requirements.

TITLE BLOCK KEY

[illegible]



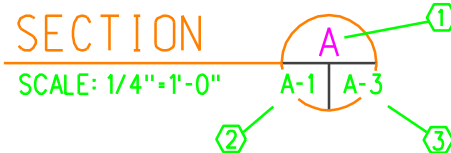
## SECTION AND DETAIL CROSS REFERENCES

THE FOLLOWING SECTIONING AND DETAILING CONVENTIONS WILL BE USED ON ALL WORKING DRAWINGS:

### SECTION SYMBOLS:

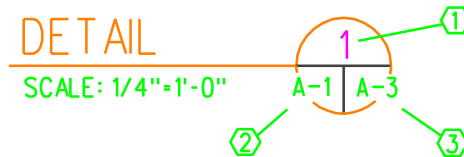


SUBTITLE FOR SECTION VIEW (TYPICAL SECTION LETTER AND SCALE).



### DETAIL SYMBOL:

SUBTITLE FOR DETAIL (TYPICAL DETAIL NUMBER AND SCALE).



### NOMENCLATURE:

- ① - SECTION OR DETAIL IDENTIFICATION (NUMBERS FOR DETAILS, LETTERS FOR SECTIONS).
- ② - SHEET NUMBER FROM WHICH SECTION OR DETAIL IS TAKEN.
- ③ - SHEET NUMBER ON WHICH SECTION OR DETAIL IS DRAWN.

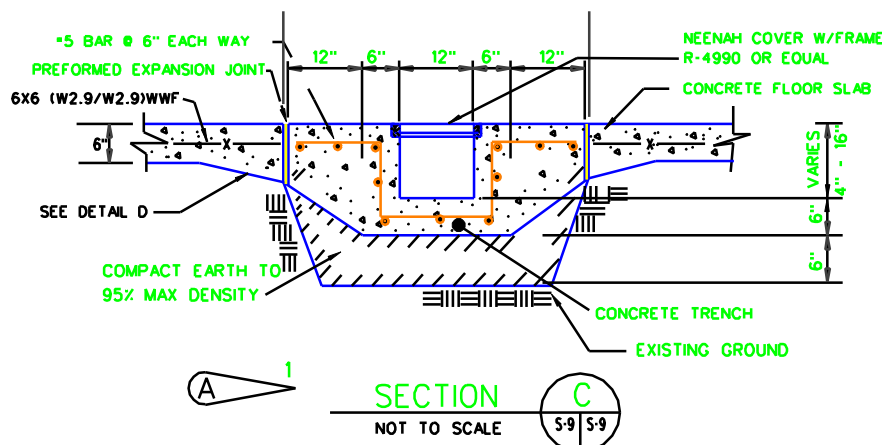
#### OPTIONAL:

AN ELLIPTICAL REFERENCE BUBBLE AS SHOWN TO THE RIGHT MAY BE USED IN LIEU OF THE CIRCLE CONVENTION DESCRIBED ABOVE.



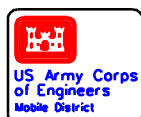
JOB  SHEET TITLE  BASE		REFERENCED DRAWING NO.	SKETCH
		REFERENCED SHEET NO.	
		CONTRACT NO.	OF
		MODIFICATION NO.	DATE
		INVITATION NO.	DESIGNER
		ADDED BY AMENDMENT NO.	

SAMPLE REVISION BLOCK



SCALE 1/2" = 1'-0"

12" 0 1 2 3 4 5 FT.



Symbol No.	Description	Date	Appr'd
1	ADDED CONCRETE CROSS SECTION	5/13/95	K.R.

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS MOBILE, ALABAMA	Designed By: X Drawn By: X Checked By: X Reviewed By: X	Date: DECEMBER 1998 File No: XXX-XXX-XXXX CDD File Name: XXXXX256.DGN Specification Number: DAC401-98-B-0000
--	--	---

MACDILL AIR FORCE BASE, FLORIDA  
RENOVATE COMMAND AND  
CONTROL FACILITY

TITLE OF DRAWING  
3 LINES PROVIDED  
USE AS REQUIRED

Sheet  
Reference  
Number:  
A-1  
Sheet X of X

AMENDMENT NO. 0002